



Investigations in ice-covered Lake Vanajavesi

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A research program on wintertime physics and ecology of Lake Vanajavesi, southern Finland is ongoing (2009-2011). The main objectives are to examine the structure and thickness of ice cover, light transfer through the ice, geochemistry and circulation of the water body beneath the ice, and the influence of the ice season on the ecological conditions in the lake. The ice cover is static consisting of snow ice and congelation ice. Albedo showed a systematic decrease from about 0.8 for dry snow to 0.2 for wet bare ice in spring, and the e-folding depth of light level was 50-70 cm for congelation ice and 10-20 cm for snow-ice. When the snow was thin or absent, the euphotic depth was 1-2 m thick. Investigations of thermodynamic modeling of ice have been made for model calibration and sensitivity studies with good results. The lake is shallow, mean depth 7.7 m, and wintertime circulation is fairly stable forced by inflow of the main river and heat fluxes from the lake bottom. The key geochemical parameters have been conductivity, pH, oxygen, colour and nitrate. Incoming river water flows under ice towards the outflow, although the fingerprint is weakening along the way. In long ice seasons oxygen deficit becomes a major issue in deep areas. The results from the field work and ice modeling are presented in this poster.